MONTHLY NOTICES

OF THE

ROYAL ASTRONOMICAL SOCIETY.

VOL. XXXIX. *February* 14, 1879. No. 4.

Lord LINDSAY, M.P., F.R.S., President, in the Chair.

John Marshall, Esq., Albion Place, Leeds; and
R. Palmer Thomas, Esq., 13 North Villas, Camden Square, N.W.;

were balloted for and duly elected Fellows of the Society.

REPORT OF THE COUNCIL TO THE FIFTY-NINTH ANNUAL GENERAL MEETING OF THE SOCIETY.

Progress and present state of the Society:—

	Compounders	Annual Subscribers	Non-resident	Mathematical Society	Patroness	Total Fellows	Associates	Grand Total
December 31, 1877	218	351	4	6	1	580	37	617
Since elected ...	+3	+29	...	...	...	...	+4	...
Deceased	−6	−10	...	...	...	...	−1	...
Removals	+3	−3	...	...	...	...	...	...
Resigned	...	−5	...	...	...	...	...	...
December 31, 1878	218	362	4	6	1	591	40	631

Mr. Barrow's Account as Treasurer of the Royal

RECEIPTS.

	£ s. d.	£ s. d.
Balance at Bankers' Dec. 31, 1877, as per Bankers' book... ... £240 19 9		
Less amount of outstanding cheque 15 0 0		
	225 19 9	
„ in hand of Secretary of Library Committee:		
On account of Turnor Fund	1 6 11	
On account of Library Expenses ...	20 8 6	
„ in hand on Petty Cash account	13 11 7	
		261 6 9
Dividend on £6,400 Consols	94 16 0	
„ £5,700 New 3 per cent. Stock ...	84 8 8	
„ £6,400 Consols	94 0 0	
„ £5,700 New 3 per cent. Stock ...	83 14 5	
		356 19 1
Received on account of Subscriptions:		
Arrears of Contributions	201 16 0	
255 Contributions for 1878	535 10 0	
2 Contributions for 1879	4 4 0	
33 Admission Fees	69 6 0	
29 First Contributions	48 6 0	
		859 2 0
7 Composition Fees		147 0 0
Sales of Publications:—		
At Society's Rooms during 1878	169 11 10	
At Williams & Norgate's during 1877 ...	12 7 6	
		181 19 4
Received from the Government Fund of the Royal Society on account of Mr. Gill's Expedition to Ascension		250 0 0
		£2,056 7 2

Astronomical Society, from Dec. 31, 1877, to Dec. 31, 1878.

EXPENDITURE.

	£	s.	d.	£.	s.	d.
Salaries:—						
Editor of *Monthly Notices*	60	0	0			
Assistant Secretary	150	0	0			
				210	0	0
Income Tax and House Duty				6	11	3
Fire Insurance				7	16	6
Printing and Lithography:—						
Spottiswoode & Co.	438	10	6			
Hazell, Watson, & Viney	206	13	0			
M. and N. Hanhart	15	12	0			
				660	15	6
Turnor Fund: Books purchased during year ...	75	5	0			
Library expenses: Binding	108	15	10			
Cards for Library Catalogue	8	13	4			
				192	14	2
Purchase of scarce volumes of the *Monthly Notices*				5	0	0
House expenses	29	9	8			
Wages	23	11	0			
Stamps and postage	60	10	7			
Carriage of books and parcels	6	19	9			
Stationery and office expenses	10	18	8			
Expenses of meetings	20	0	0			
Coals and gas	48	0	7			
Fittings in lavatory	19	8	0			
Sundry fittings and repairs	9	1	5			
Sundries	6	7	5			
Cheque book	0	8	4			
Bankers' commission on cheques	0	1	11			
				234	17	4
Paid on account of Mr. Gill's Expedition to Ascension (previous payment of £400. 15*s.* 6*d.* appears in last year's account. Total amount of grant £500)				99	4	6
Mrs. Jackson-Gwilt's annuity				8	19	0
Balance at Bankers' Dec. 31, 1878	605	0	3			
,, in hand of Secretary of Library Committee:						
On account of Turnor Fund	1	1	11			
On account of Library expenses ...	16	12	8			
,, in hand on Petty Cash account	7	14	1			
				630	8	11
				£2,056	7	2

Examined and found correct,

J. Kennedy Esdaile.
A. A. Common.
Wentworth Erck.

Assets and present Property of the Society, January 1, 1879:—

	£	s.	d.	£	s.	d.
Balance at Bankers' Dec. 31, 1878	605	0	3			
„ in hand of Secretary of Library Committee on account of Turnor Fund	1	1	11			
„ ditto ditto on account of Library expenses	16	12	8			
„ in hand on Petty Cash account	7	14	1			
				630	8	11
Due on account of Subscriptions:—						
4 Contributions of 5 years' standing ...	42	0	0			
7 „ 4 „ ...	58	16	0			
11 „ 3 „ ...	69	6	0			
21 „ 2 „ ...	88	4	0			
47 „ 1 „ ...	98	14	0			
Various amounts	12	12	0			
Two admission fees and first contributions	6	6	0			
	375	18	0			
Less two contributions paid in advance ...	4	4	0			
				371	14	0
Due for publications	1	0	0			
„ from Williams & Norgate for sales during 1878	36	17	9			
				37	17	9

£6,400 Consols, including the Lee Fund (£300), the Turnor Fund (£450), and the Horrox Memorial Fund (£100).

£5,700 New 3 per cent. Stock, including Mrs. Jackson-Gwilt's gift (£300).

Astronomical and other MSS., books, prints, &c.

One gold medal.

Unsold publications of the Society &c.

Report of the Auditors.

We, the duly appointed Auditors, beg to lay before this General Meeting of the Royal Astronomical Society the following Report:—

1. We have examined the Treasurer's account, and an account of the assets and property of the Society, and have found and certified the same to be correct.

2. The receipts and expenditure for the past year are as stated in the Treasurer's account.

3. The cash in hand on December 31, 1878, including the balance at the Bankers', amounts to 630*l.* 8*s.* 11*d.*

4. The funded property of the Society is in a satisfactory state, and the books, instruments, and other effects have been examined as far as possible and found in a satisfactory condition.

5. We have laid on the table a list of the names of those Fellows who are now in arrear for sums due at the last Annual General Meeting, with the amount due against each Fellow's name.

J. KENNEDY ESDAILE.
A. A. COMMON.
WENTWORTH ERCK.

Stock in hand of volumes of the *Monthly Notices* :—

Vol.	At Society's Rooms.	At Williams & Norgate's.	Vol.	At Society's Rooms.	At Williams & Norgate's.
I.	83	1	XXI.	24	...
II.	84	...	XXII.	39	...
III.	...	...	XXIII.	22	...
IV.	...	...	XXIV.	25	...
V.	...	...	XXV.	7	...
VI.	50	...	XXVI.	13	...
VII.	2	...	XXVII.	2	...
VIII.	143	2	XXVIII.	79	2
IX.	25	3	XXIX.	60	1
X.	178	2	XXX.	74	4
XI.	186	2	XXXI.	107	2
XII.	12	2	XXXII.	134	2
XIII.	164	3	XXXIII.	120	4
XIV.	110	3	XXXIV.	95	7
XV.	130	2	XXXV.	79	5
XVI.	112	3	XXXVI.	45	1
XVII.	138	1	XXXVII.	59	5
XVIII.	172	...	XXXVIII.	125	14
XIX.	68	...	Index to *Monthly Notices*	607	...
XX.	40	...			

In addition to the above volumes of the *Monthly Notices*, the Society has a considerable stock of separate numbers of nearly all the volumes. With the exception, however, of Vols. XXXVI., XXXVII., and XXXVIII., no complete volumes can be formed from the separate numbers in stock.

Stock in hand of volumes of the *Memoirs* :—

Vol.	At Society's Rooms.	At Williams & Norgate's.	Vol.	At Society's Rooms.	At Williams & Norgate's.
I. Part 1	5	...	XXII.	163	1
I. Part 2	45	..	XXIII.	159	1
II. Part 1	61	...	XXIV.	165	2
II. Part 2	23	...	XXV.	177	2
III. Part 1	70	...	XXVI.	181	2
III. Part 2	92	...	XXVII.	434	1
IV. Part 1	86	3	XXVIII.	396	1
IV. Part 2	97	3	XXIX.	421	1
V.	111	4	XXX.	172	1
VI.	131	4	XXXI.	157	1
VII.	155	3	XXXII.	174	1
VIII.	133	4	XXXIII.	178	3
IX.	142	3	XXXIV.	177	9
X.	153	1	XXXV.	127	3
XI.	165	1	XXXVI. (with M.N.)	206	15
XII.	169	...	XXXVI. (without)	16	...
XIII.	177	...	XXXVII. Part 1	372	8
XIV.	378	3	XXXVII. Part 2	320	6
XV.	149	1	XXXVIII.	313	1
XVI.	179	...	XXXIX. Part 1	291	1
XVII.	155	3	XXXIX. Part 2	308	2
XVIII.	159	...	XL.	336	1
XIX.	164	...	XLII.	321	2
XX.	162	2	XLIII.	380	3
XXI. Part 1	314	...	Index to *Memoirs*	674	4
XXI. Part 2	99	...			
XXI. 1 & 2 (together)	68	2			

Instruments belonging to the Society.

No. 1. The *Harrison* clock.
,, 2. The *Owen* portable circles, by Jones.
,, 3. The *Beaufoy* circle.
,, 4. The *Beaufoy* transit instrument.
,, 5. The *Herschel* 7-foot telescope.

No. 6. The *Greig* universal instrument, by Reichenbach and Ertel. The transit telescope, by Ultzschneider and Fraunhofer, of Munich.
„ 7. The *Smeaton* equatoreal.
„ 8. The *Cavendish* apparatus.
„ 9. The 7-foot Gregorian Telescope (late Mr. Shearman's).
„ 10. The Variation transit instrument (late Mr. Shearman's).
„ 12. The *Fuller* theodolite.
„ 13. The Standard scale, by Troughton and Simms.
„ 14. The *Beaufoy* clock, No. 1.
„ 15. The *Beaufoy* clock, No. 2.
„ 16. The *Wollaston* telescope.
„ 17. The *Lee* circle.
„ 18. The *Sharpe* reflecting circle.
„ 19. The *Brisbane* circle.
„ 20. The *Baker* universal equatoreal.
„ 21. The *Reade* transit.
„ 22. The *Matthew* equatoreal, by Cooke.
„ 23. The *Matthew* transit instrument.
„ 24. The *South* transit instrument.
„ 25. A quadrant, by Bird (formerly belonging to Captain Cook).
„ 26. A globe showing the Precession of the Equinoxes.
The *Sheepshanks* collection:—
„ 27. (1) 30-inch transit instrument, by Simms, with level and two iron stands.
„ 28. (2) 6-inch transit theodolite, with circles divided on silver; reading microscopes, both for altitude and azimuth; cross and siding levels; magnetic needle; plumbline; portable clamping foot and tripod stand.
„ 29. (3) $4\frac{6}{10}$-inch achromatic telescope, about 5 feet 6 inches focal length; finder; rack motion; double-image micrometer; two other micrometers; one terrestrial and ten astronomical eyepieces, applied by means of two adapters, with equatoreal stand, clock movement.
„ 30. (4) $3\frac{1}{4}$-inch achromatic telescope, with equatoreal stand; double-image micrometer; one terrestrial and three astronomical eyepieces.
„ 31. (5) $2\frac{3}{4}$-inch achromatic telescope, with stand; one terrestrial and three astronomical eyepieces.
„ 33. (7) 2-foot navy telescope.
„ 34. (8) A transit instrument of 45 inches focal length; with iron stand, and also Ys for fixing to stone piers; two axis levels.
„ 35. (9) Repeating theodolite, by Ertel, with folding tripod stand.

No. 36. (10) 8-inch pillar sextant, by Troughton, divided on platinum, with counterpoise stand and artificial horizon.

„ 37. (11) Portable zenith telescope and stand, $2\frac{3}{4}$-inch aperture and 26 inches focal length; 10-inch horizontal circle and 8-inch vertical circle, read to 10″ by two verniers to each circle.

„ 38. (12) 18-inch Borda repeating circle, by Troughton, $2\frac{1}{8}$-inch aperture and 24 inches focal length; the circles divided on silver, the horizontal circle being read by four verniers, and the vertical circle by three verniers, each to 10″.

„ 39. (13) 8-inch vertical repeating circle, with diagonal telescope, by Troughton and Simms; circle divided on silver, reading to 10″; a 5-inch circle at eye-end reading to single minutes; horizontal circle 9 inches diameter in brass, reading to single minutes.

„ 40. (14) A set of surveying instruments, consisting of a 12-inch theodolite for horizontal angles only, reading to 10″; two sets of adjusting plates; tripod stand with enclosed telescope; a deal box with heavy stand for theodolite; a box containing the Y piece of level; two large and three small ground-glass bubbles divided; a box containing level collimator, object-glass $1\frac{5}{8}$-inch diameter and 16 inches focal length; micrometer eyepiece, comb, and wires; mercury bottle and trough.

„ 41. (15) Level collimator with object-glass $1\frac{7}{8}$-inch diameter and 16 inches focal length; stand, rider-level, and fittings.

„ 42. (16) 10-inch reflecting circle, by Troughton, reading by three verniers to 20″; counterpoise stand; artificial horizon with mercury; two tripod stands.

„ 43. (17) Hassler's reflecting circle, by Troughton, with counterpoise stand.

„ 44. (18) 6-inch reflecting and repeating circle, by Troughton and Simms, contained in three boxes, two of which form stands. The circle is divided on silver, and is read to single minutes; two inside arcs divided to single degrees, 150 degrees on each side; artificial horizon and mercury.

„ 45. (19) 5-inch reflecting and repeating circle, by Lenoir, of Paris.

„ 46. (20) Reflecting circle, by Jecker, of Paris, 11 inches in diameter, with one vernier reading to 15″.

„ 47. (21) Box sextant; reflecting plane and level.

„ 48. (22) Prismatic compass, by Troughton and Simms.

„ 49. (23) Mountain barometer.

„ 50. (24) Prismatic compass, by Thomas Jones, mounted with a cylindrical lens.

No. 51. (25) Ordinary $4\frac{1}{2}$-inch compass with needle.
„ 52. (26) Dipping needle, by Robinson.
„ 53. (27) Compass needle, mounted for variation.
„ 54. (28) Magnetic intensity needle, by Meyerstein, of Göttingen; a strongly fitted brass box with heavy magnet; filar suspension.
„ 55. (29) Box of magnetic apparatus.
„ 56. (30) Hassler's reflecting circle, by Troughton; a $10\frac{1}{2}$-inch reflecting and repeating circle, with stand and counterpoise, divided on platinum with two movable and two fixed indices; four verniers reading to $10''$.
„ 57. (31) Box sextant and glass plane artificial horizon, by Troughton and Simms.
„ 58. (32) Plane $2\frac{3}{8}$-inch speculum, artificial horizon, and stand.
„ 59. (33) $2\frac{1}{2}$-inch circular level horizon, by Dollond.
„ 60. (34) Artificial horizon, roof, and trough; the trough $8\frac{1}{4}$ by $4\frac{1}{4}$ inches. Tripod stand.
„ 61. (35) Set of drawing instruments, consisting of 6-inch circular protractor and common protractor, T-square: one beam compass.
„ 62. (36) A pentagraph.
„ 63. (37) A noddy.
„ 64. (38) A small Galilean telescope with object-glass of rock crystal.
„ 65. (39) Five levels.
„ 66. (40) 18-inch celestial globe.
„ 67. (41) Varley stand for telescope.
„ 69. (43) Telescope, with the object-glass of rock crystal.
„ 70. Portable equatoreal stand.
„ 71. Portable altazimuth tripod.
„ 72. Four polarimeters.
„ 74. Registering spectroscope, with one large prism.
„ 76. Two five-prism direct-vision spectroscopes.
„ 78. $9\frac{1}{4}$-inch silvered-glass reflector and stand, by Browning.
„ 79. Spectroscope.
„ 80. A small box, containing three square-headed Nicol's prisms; two Babinet's compensators; two double-image prisms; three Savarts; one positive eyepiece, with Nicol's prism; one dark wedge.
„ 81. A back-staff, or Davis' quadrant.
„ 82. A nocturnal or star dial.
„ 83. An early non-achromatic telescope, of about 3 feet focal length, in oak tube, by Samuel Scatliffe, London.
„ 84. A Hollis observing chair.
„ 85. A double image micrometer, by Troughton and Simms.

No. 86. A $4\frac{1}{2}$-inch Gregorian Reflecting Telescope, by Short, with altazimuth stand and 6-inch altitude and azimuth circles and two eyepieces.

,, 87. A $3\frac{1}{4}$-inch Gregorian Reflecting Telescope with wooden tripod stand.

,, 88. A pendulum with 5-foot brass suspension rod, working on knife edges, by Thomas Jones.

,, 89. A Rhabdological Abacus. A contrivance invented by Mr. H. Goodwyn, consisting of a box filled with compartments, in which are square rods covered with numbers, which can be arranged so as to facilitate the labour of multiplying high numbers.

No. 90. An Arabic celestial globe of bronze, not quite 6 inches in diameter.

,, 91. An astronomical time watchcase, by Professor Chevallier.

,, 92. A 2-foot protractor, with two movable arms, and vernier.

,, 93. A beam compass, in box.

,, 94. A 2-foot navigation scale.

,, 95. Stand for testing measures of length. It consists of two T-shaped gun-metal bars $5\frac{1}{2}$ feet long, to which are fitted two micrometers mounted with adjusting screws for level and position.

,, 96. Artificial planet and star, for testing the measurement of a fixed distance at different position angles.

,, 97. A 12-cell Leclanché battery.

Instruments Nos. 96 and 97 were purchased by Mr. Gill out of money contributed by the Society towards the expenses of his expedition to observe the opposition of *Mars*.

The following instruments are lent, during the pleasure of the Council, to the undermentioned persons :—

No. 4. The *Beaufoy* transit instrument, to the Observatory, Kingston, Canada.

,, 12. The *Fuller* theodolite, to the Director of the Sydney Observatory.

,, 22. The *Matthew* equatoreal, to Mr. Brett.

,, 72. Two polarimeters, to Mr. Ranyard.

,, 74. Registering spectroscope, with prism, to Mr. Lecky.

,, 76. One 5-prism spectroscope, to Mr. Plummer.

,, 78. The $9\frac{1}{4}$-inch reflector, to Mr. Neison.

From the *Sheepshanks* collection :—

No. 30. (4) $3\frac{1}{4}$-inch equatoreal and stand, to Mr. Sadler.

,, 31. (5) $2\frac{3}{4}$-inch telescope and stand, to Mr. Birt.

,, 34. (8) Transit instrument, to the Rev. Professor Pritchard.

,, 35. (9) Repeating theodolite, to the Sydney Observatory.

,, 39. (13) 8-inch repeating circle, to Mr. Plummer.

No. 42. (16) Mercury bottle, horizon and roof, to Captain Noble.
„ 43. (17) Hassler's reflecting circle, to Mr. Gill.
„ 69. (43) Telescope, with rock-crystal object-glass, to Dr. Huggins.

The Gold Medal.

The Council have awarded the Society's Gold Medal to Professor Asaph Hall for his discovery and observations of the satellites of *Mars*, and for his determination of their orbits. The President will lay before the Society the grounds upon which the Council have decided npon their award.

The Advowsons of Stone and Hartwell.

In the year 1836 Dr. John Lee, who was then Treasurer of the Royal Astronomical Society, executed a deed of gift by which he conveyed to the Society the advowson of Hartwell, and in 1844, by another deed of gift, he conveyed the advowson of Stone to the Society.

Shortly before the date of these deeds his estates had been resettled by Private Act of Parliament, by which the manors of Hartwell and Stone were entailed, leaving Dr. Lee with only a life interest in them. The living of Stone fell vacant in the lifetime of Dr. Lee, and the Society presented Dr. Booth, who held the living until last April, when he died. Soon after the death of Dr. Booth the Council received formal notice that the present lord of the manor of Hartwell, Mr. Edward Lee, intended to dispute the Society's title to both livings, on the ground that they were (in legal language) appendant to the manors, and consequently included in the entail.

The Council, nevertheless, presented the Rev. James Challis, M.A., of Trinity College, Cambridge, who, besides being the son of Professor Challis, a distinguished Fellow of the Society, had many other recommendations. Mr. Lee took steps to dispute the presentation, and the Council employed as their solicitor Mr. Merriman of Austin Friars, who has unusual opportunities of being acquainted with such matters. The result of Mr. Merriman's investigation was that he found that the advowson of Stone had long been severed from the manor, and that the Society's title was good; but that in the case of Hartwell the matter was at least very doubtful. The litigation to establish such a claim, depending on historical inquiries, would be very

costly; and, even if the Society succeeded, it would have to bear a great part of the costs, which could not, according to the rules laid down by the Courts, be recovered from the other side.

It was found that Mr. Lee did not want to present any friend of his own to the vacant living, and was willing to settle the dispute by purchasing, for the sum of £700, the advowson of Stone, subject to the Society's right of presentation to the existing vacancy, and to a release of the Society's claim to Hartwell being included.

The Council having been advised that the sum of £700 was a fair price under the circumstances, entered into a provisional agreement with Mr. Lee for the conveyance and release of all right and claim of the Society to the advowsons of Stone and Hartwell in consideration of the above-mentioned sum, and recommended that the Fellows of the Society should approve and concur in the proposed agreement.

The following resolution was therefore, at the instance of the Council, submitted to the Annual General Meeting held on the 14th of February 1879:—

> "That this Meeting approve and concur in a provisional agreement made between the Council and Mr. Edward Lee for the conveyance and release to Mr. Lee of all the right and claim of the Society to the advowsons of Stone and Hartwell in consideration of the sum of £700."

The Resolution, having been put by the President, was carried unanimously.

Mr. Gill's Expedition for observing the Opposition of Mars.

During the past year the Society has received from Mr. Gill the sum of £250, being the amount granted from the Government Fund of the Royal Society towards the expenses of his Expedition to Ascension.

Up to January 1, 1878, the Royal Astronomical Society had paid £400. 15*s*. 6*d*. towards the expenses of the Expedition; and during the past year a further sum of £99. 4*s*. 6*d*. has been paid to Mr. Gill, completing the sum guaranteed to him. Thus the Government Fund of the Royal Society and the Royal Astronomical Society have so far contributed equally to the expenses of the Expedition.

Mr. Gill, since his return from Ascension, has been busily engaged in reducing the observations made for the purpose of determining the solar parallax. A detailed report of the progress made in the reductions is given in the *Monthly*

Notices for December last (vol. xxxix., p. 51). Mr. Gill has received most important aid towards perfecting his work in the energetic co-operation of fourteen of the principal Observatories. From twelve of these he has received results of meridian observations of the *Mars* comparison stars, and in the *Monthly Notices* for January (vol. xxxix., p. 98) he has published a preliminary discussion of these results. Since that time he has also received a valuable series of results from Professor Lewis Boss, of the Dudley Observatory, Albany, U.S.

The discussion indicates the existence of considerable systematic discordances in the Right Ascensions obtained at the various Observatories, discordances three times greater than could be accounted for by systematic differences in the R.A. of the clock stars employed. These discordances have in part been traced to a personality or habit of observing, which is different for stars of different magnitude; but, besides this, there is a strong suspicion of systematic instrumental error at some of the Observatories. A circular has been issued with a request for further observations, and Mr. Gill is now engaged in discussing the heliometric triangulation of the stars. He hopes, as the result of these discussions, and by aid of the additional observations kindly promised, not only to obtain much information as to the cause of the discordances above referred to, but also to arrive at final places of the comparison stars of such high accuracy that they may be considered absolutely known in the final reduction of the *Mars* observations.

The greater part of the tabular distances of *Mars* from the comparison stars have been computed (employing approximate places of the comparison stars), so that, when the final star places have been arrived at, comparatively little time will be required for the formation of the final equations and their discussion.

The results of observations of α_1 and α_2 *Centauri* at Ascension have been published in the *Monthly Notices* (vol. xxxix., p. 126). Subsequent observations at Melbourne prove that these Ascension observations were made near the time of closest approach of the components of this interesting binary.

The observations in connection with the Expedition which have not yet been reduced are—

1. Moon culminations observed with the transit instrument.
2. Lunar distances measured with the heliometer from the Moon's limbs and from the lunar spot *Hypatia* B.
3. Measures of distance of the spot *Hypatia* B from the Moon's limb along known position-angles.
4. Measures of the diameters of *Mars* and *Saturn*.
5. Measures of the distance of *Mars* and *Saturn* near conjunction, Nov. 1, 2, 3, 4, and 5.
6. Measures of ε *Indi* from neighbouring stars.
7. Measures of *Melpomene* from comparison stars.

The discussions not yet begun are—

1. Deduction of longitude from (1), (2), and (3).
2. Discussion of the merits of the method of employing a lunar spot for longitude operations, and for determining the lunar parallax by the heliometer-diurnal method, with the data of (2) and (3).
3. Discussion of the employment of a similar method for future determination of the parallactic inequality.
4. Discussion of the tabular errors of *Melpomene*—the want of sufficient morning observations rendering a satisfactory discussion of the parallax impossible.

The completion of all the work still involves much labour, but no effort will be spared to lay the whole before the Society as soon as possible. Mr. Gill hopes to be able to present the determination of the solar parallax from *Mars* to the Fellows, in the shape of a volume of the *Memoirs*, before next winter session.

The Library.

The Council are glad to be able to report that the number of books taken out of the Library during the past year is more than 20 per cent. in excess of the number taken out during any former year, and the number of persons using the Library for purposes of reference has also considerably increased. The binding of the Society's books has been systematically proceeded with. 1,062 volumes have been bound in a substantial manner at a cost of £108. 15*s*. 10*d*., and 343 volumes have been purchased from the Turnor Fund at a cost of £73.

The Library Committee also have pleasure in being able to report that during the past year they have completed the Society's series of the *Astronomische Nachrichten* at a comparatively trifling cost. It would be well if the Society possessed two copies of this valuable astronomical publication, one for reference in the library and the other for loan. The Society already (thanks to the gift of Miss Sheepshanks) possesses the first forty volumes in duplicate. These are the rarest part of the series, and there are also duplicate copies of several of the later volumes. During the past year the Library Committee have completed the Society's set of the *Sitzungberichte* of the Vienna Academy, and have also nearly made up their set of the *Berliner Jahrbuch*; the only missing volumes now being those for 1843 and 1861. The Committee are particularly anxious to complete the Society's set of the *Connaissance des Temps*, the first volume

of which was published in 1679. The Society's set commences in 1810; only a few odd volumes of the earlier part of the series are in the Library.

Amongst the presents to the Society's Library during the past year, a volume containing nearly a complete set of Mitchel's *Sidereal Messenger*, which was presented to the Society by Mr. Burnham—should especially be mentioned. As far as the Council are aware, this appears to be the only set of the *Sidereal Messenger* in England. The cataloguing of the Society's books has been commenced and is progressing. The Council hope that the work will be completed in the course of the present year.

Publications of the Society.

Vol. XLI. of the *Memoirs* has been somewhat delayed in consequence of Mr. Ranyard's visit to America. It was hoped that it would have been published during the past session; but the Council are glad to be able to report that the last chapter is now in the hands of the printers.

Vol. XLIV. of the *Memoirs* is also in the hands of the printers, and will shortly appear. It contains the following Papers:—

Mr. E. Neison. 'On a General Method of Treating the Lunar Theory.'

Mr. N. E. Green. 'Observations of *Mars* at Madeira, August and September 1877.'

Mr. Maxwell Hall. 'Opposition of *Mars* 1877.'

Mr. S. W. Burnham. 'Double Star Observations made in 1877–78 at Chicago with the 18½-inch Refractor of the Dearborn Observatory.'

The volume of the *Monthly Notices* which has appeared during the past year contains some valuable Papers by American and Continental Astronomers. The Council hope that the communication between English and Foreign Astronomers in the publications of the Society will continue to increase; but they take this opportunity of mentioning that some of the papers which have been received by the Society have not been printed, on account of their having been previously published abroad.